Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Science 10: Human Impacts on Ecology Practice

Part 1: Multiple Choice:

1. Which of the following is not considered a form of **resource extraction**?

 A. Logging forests in British Columbia.

 B. Mining for gold in the Northwest Territories.

 C. Fishing for Basa fish in Vietnam.

 D. Clearing forest in Brazil for a cattle farm.

 E. Withdrawing oil from the Alberta oil-sands.

2. Which of the following is a result of clear-cut logging?

 1. Habitat loss

 2. Soil erosion

 3. Increased run-off, flooding in watersheds

 A. 1 only B. 2 only C. 3 only D. 1 and 3 only E. 1, 2 and 3

3. Organisms that first populate an area during primary succession are known as \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

 A. pioneer species B. keystone species

 C. invasive species D. original species

 E. Biological successors

4. Which of the following events will precede primary succession?

 A. Forest fire B. Tsunami

 C. Flood D. Insect infestation

 E. Formation of a volcanic island

5. Which of the following is the best description of evolution?

 A. The process by which a new ecosystem changes and develops into a mature or climax ecosystem.

 B. The complete change of an individual between life phases, like caterpillar changing into a butterfly.

C. The change over a long period time of a population as advantageous traits are passed down between generations.

 D. When an ecosystem is changed as the result of introduced species.

6. Which of the following is the most direct result of farm vehicles being used to plant, harvest and till farm fields?

 A. Soil compaction B. Soil nitrification

 C. Habitat fragmentation D. Soil contamination

 E. Soil Aeration

7. Which of the following is the term to describe the introduction of toxins to the soil in concentrations that are harmful to organisms.

 A. Soil compaction B. Soil nitrification

 C. Habitat fragmentation D. Soil contamination

 E. Soil Aeration

8. The reason that the majority of the rainforest is clear-cut in South America is:

 A. To make room for urban development, like building homes and shopping centres

 B. To clear the land for agriculture.

 C. The trees have been infested by parasitic beetles and must be removed.

 D. The trees are harvested for their wood.

 E. The president of South America’s dad was killed by a tree and now he’s out for revenge.

9. This term describes separating an ecosystem into separate pieces as humans build roads, residential areas, farms etc.

 A. Soil compaction B. Habitat loss

 C. Contamination D. Biomagnification

 E. Habitat fragmentation

10. Which of the following is not a natural event that affects an ecosystem?

 A. Forest fire caused by a lightning strike. B. Flooding

 C. Drought D. Agriculture

 E. Tsunami

11. Which of the following describe reasons that most industries (farming, forestry, mining…) do not operate sustainably?

 1. Sustainable practices are more expensive

 2. Sustainable practices produce smaller yields

 3. Sustainable practices take more time

 A. 1 only B. 2 only C. 3 only D. 1 and 2 only E. 1, 2 and 3

12. Which of the following helps explain why the mountain pine beetle has become a major problem in B.C. forests?

 1. Warmer winters due to climate change means less beetles die off in winter

 2. The beetle is an invasive species with no natural predators

 3. Fire suppression has left more trees standing and allowed the beetle population to

grow.

A. 1 only B. 2 only C. 3 only D. 1 and 3 only E. 1, 2 and 3

13. What does the term CAFO refer to?

 A. Any large industrial farming operation

 B. A method of farming that depends largely on genetically modified seeds

 C. A form of chemical pollutant that remains in the soil for a long period of time (decades)

 D. A method of raising animals in which animals are close together and are fed mostly corn diets.

 E. A method of cutting trees that is more sustainable than clear-cut

14. What does the term CAFO stand for?

 A. Concentrated Animal Feeding Operation

 B. Concentrated Agricultural Farming Operation

 C. Canadian American Farmers’ Organization.

 D. Centralized American Food Outlet

15. Which of the following is **not** a result of large scale industrial farming?

 A. Increased soil erosion due to fields being left bare

 B. Creation of large toxic ponds to store chemicals used in extraction

 C. Soil compaction as a result of farm vehicles

 D. Leaching of chemical from soil into surrounding water systems

 E. Loss of soil nutrients from repeat production of single crops

The cane toad was introduced to Australia in order to control the population of beetles that were damaging sugar cane crops. The population of the cane toad rapidly grew and they began to prey on native amphibians and lizards. The cane toad population is still considered a major problem in Australia. The toads produce a powerful poison through their skin which kills cats, dogs and even curious children who may accidentally put a toad into their mouth.

16. In the above example the can toad is **best** described as:

 A. a native species B. an introduced species

 C. an invasive species D. a pioneer species

17. In certain cases invasive species can completely kill off a native species. The loss of ALL members of a species from Earth is known as:

 A. Competition B. Parasitism

 C. Predation D. Succession

 E. Extinction

18. The reestablishment of a habitat after a flood is known as:

 A. Secondary succession B. Adaptive radiation

 C. Evolution D. Primary succession

 E. Bioremediation

19. The change over time of a particular population as certain beneficial traits are passed on from generation to generation is known as:

 A. Natural selection B. Primary succession

 C. Adaptive radiation D. Secondary succession

 E. Generational memory

20. Kelp forests in the northern Pacific ocean have almost completely disappeared. The kelp forests have been devastated by sea urchins whose population grew rapidly after the populations of sea otters declined. The sea otter population decline was caused by Orca whales seeking new food sources after Sperm whales were brought to near extinction by commercial whaling. The loss of the kelp forests is due to which of the following?

 A. Overexploitation of a natural resource.

 B. Sustainable development of the fishing/whaling industry.

 C. The introduction of an evasive species.

 D. The primary succession of the marine habitat

21. Grass begins to grow through cracks in a parking lot constructed on top of a natural wetland. This is an example of:

 A. Primary succession B. Secondary succession

 C. Adaptive radiation D. Introduced species

 E. Bioremediation

22. Which of the following is **not** a major concern of habitat fragmentation?

A. seed dispersal B. plant pollination

C. animal reproduction D. soil compaction

23. After a forest fire grasses and plants grow back quickly. In a relatively short time, the forest has returned to a healthy stable state. This is an example of:

 A. Natural selection

 B. Primary succession

 C. Adaptive radiation

 D. Secondary succession

 E. Generational memory

24. After studying the finches (birds) on the Galapagos Island, Charles Darwin suggested that evolution could occur by a series of random mutations. If the mutations are beneficial they are more likely to be passed down to the next generation. This process is known as:

 A. Natural selection

 B. Primary succession

 C. Adaptive radiation

 D. Secondary succession

 E. Generational memory

25. All of the following are NOT characteristics of a sustainable ecosystem? (More than one may apply)

A. maintaining biodiversity B. no resource use

C. responsible land use D. ability to sustain ecological process

 E. meeting the resource needs of the population F. No pollution can be generated

26. Which is the best meaning of overexploitation of a resource?

A. the use or extraction of a resource until it is depleted

B. introduced species that can take over the habitats and resources of native species

C. extracting a resource in a way that produces pollution

D. organisms that are transported intentionally or by accident into new regions

27. This term refers to a pollutant that remains in the environment for a long time after it is released:

 A. POP B. BOB C. MMN D. QVR E. CAFO

28. The development of many sub-species from a single common ancestor as a result of evolution in different habitats is known as:

 A. Natural selection B. Primary succession

 C. Adaptive radiation D. Secondary succession

 E. Generational memory

29. Kelp forests in the northern Pacific Ocean have almost completely disappeared. The kelp forests have been devastated by sea urchins whose population grew rapidly after the populations of sea otters declined. The sea otters are a top predator in the kelp forest habitat. This downward effect from the top a food chain to the bottom of the food chain is known as:

 A. The green world theory

 B. Natural selection

 C. Trophic cascade

 D. Primary succession

 E. Secondary succession.

30. Which of the following explains why corn is grown in such large volumes in the United States?

 A. Corn is the most nutritious grain in the world.

 B. Corn is the healthiest type of feed for both cows and chickens.

 C. The meat industry has pressured government to produce large volumes of corn to keep prices down.

 D. Farmers know that corn is the most profitable crop and so they produce a lot of it.

31. What method is used to produce the most electricity on Earth?

 A. Solar power

 B. Wind turbines

 C. Fossil fuels

 D. Nuclear

 E. Hydroelectricity

32. According to the United States Food and Drug Administration (FDA), its responsibilities include “protecting the public health by assuring that foods are safe, wholesome, sanitary and properly labeled.” Over the past decades, at least seven high-ranking employees in the FDA have an employment history with the [Monsanto Company](http://www.monsanto.com/Pages/default.aspx). Explain why this is of concern.

33. Which of the following is an issue related to monoculture farming?

 1. loss of biodiversity

 2. soil degradation

 3. increased susceptibility to disease

 A. 1 only D. 1 and 2 only

 B. 2 only E. 1 and 3 only

 C. 3 only F. 1, 2 and 3

34. Which of the following is the MOST significant effect of building a dam to produce electricity?

 A. habitat loss in the region flooded by the dam.

 B. release of CO2 in the building of the dam.

 C. Release of CO2 in the operation of the dam.

 D. Release of pollution into the water by operating the dam.

35. The increase

Part B: Matching; Match the words on the left with the descriptions on the right.

\_\_\_\_\_ Adaptive radiation A. First organisms to populate a region during primary

succession. These species alter the abiotic and biotic characteristics of the region so other organisms can move in

\_\_\_\_\_ Ecological succession

B. Using natural resources in such a way as to meet the

needs of the current population while ensuring that there will be enough left to meet the needs of the

\_\_\_\_\_ Pioneer species future.

C. A large ocean wave following an earthquake.

\_\_\_\_\_ Sustainable development D. An introduced species that outcompetes the species

 that naturally live in that ecosystem.

E. The development of multiple species from a common

\_\_\_\_\_ Secondary succession ancestor. Each new species is specifically adapted to a

 unique niche.

F. The development of an ecosystem in an area where

\_\_\_\_\_ Primary succession no ecosystem previously existed. Takes thousands of

 years.

 G. The cutting and harvesting of trees to be used as

\_\_\_\_\_ Tsunami wood primarily for construction.

 H. The process by which natural mutations give a

member of a population a trait which provides

\_\_\_\_\_ Natural selection competitive advantage. These traits are passed down to

 consecutive generations. In this way the traits of the

population change over time.

\_\_\_\_\_ Invasive species I. The destruction of forest habitats to make space for

other land uses. These include urban developments (cities) or agriculture

\_\_\_\_\_ Forestry J. Farming in which a single crop is grown.

 K. The redevelopment of an ecosystem following the

destruction of a mature ecosystem, for example

\_\_\_\_\_ Deforestation following a forest fire.

 L. The gradual change over time of one ecosystem into

another.

\_\_\_\_\_ Monoculture

 M. Understanding gained over many generations of

how an ecosystem works. Includes understandings of ways in which plants and animal interact, as well as how

 humans can sustainable use the ecosystem.

\_\_\_\_\_ Traditional Ecological Knowledge

Written Response. Answer the following using *full sentences.*

1. In 1859 a man named Thomas Austin released 24 European rabbits on his farm in Australia. That turned out to have been a mistake. By 1937 the population had reached an estimated 600 million. When Austin released the animals very little was understood about the delicate balance that existed in ecosystems. Austin himself is quoted saying “The introduction of a few rabbits could do little harm and might provide a touch of home, in addition to a spot of hunting.”. Not understanding science can be a dangerous thing.

Provide some possible explanations as to why the rabbits were so successful in this new ecosystem.

Research the release of rabbits into Australia. What reasons were for the success of the rabbits are cited?

How many did you predict?

2. Given that clear-cut logging is unsustainable, provide three reasons (with explanations) why the practise remains common throughout the world.

3. Clearly describe what is meant by “natural selection”. Include clear examples to illustrate your answer.

4. Describe 5 simple changes you could make to live more sustainably. For each explain why it is more sustainable than what you do now.